

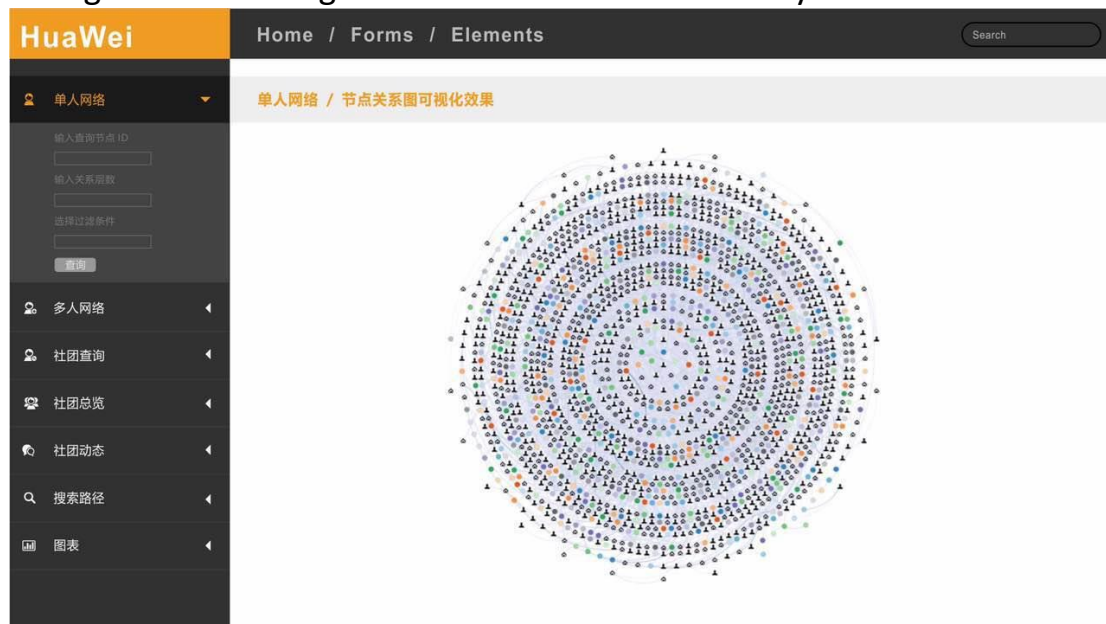
Weekly Report 2016.09.19-2016.09.25

Progress:

1. Huawei Project

Feiran send us the new data interfaces. This week I have added the interfaces to our project. Currently, the statistical charts are done. Next I will link other functions with new data interfaces.

Zhang Wei have designed the user interface of our system.

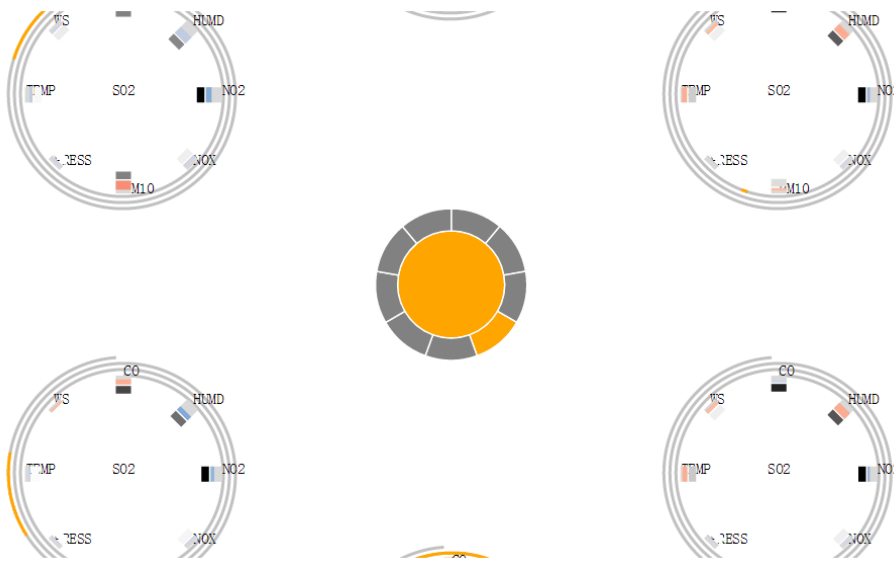


The design of other views is undergoing.

2. Temporal Ensemble Rankings

3. TCPTree

We revised the visualization of the tree structure when the tree is higher than 2. We use a sunburst to represent the remaining structure of the tree, that is, after two partition operations or more, we'll add a sunburst to represent the root and other tree nodes that have distances larger than 1 to the newly partition leaf nodes in the center of the visualization. Newly partitioned nodes surround the sunburst.



I also asked Huihua to help us revise the colors we use in the visualization.

4. Papers

1) TimeCrunch: Interpretable Dynamic Graph Summarization

This paper is reported by Zongzhuang on seminar and I think this paper is worth perusing for me. This paper described a technique called TimeCrunch which finds coherent, temporal patterns in dynamic graphs. Structures exist in static networks and dynamic networks are both defined and the join of these two kinds of structures can be found by the algorithm.

I think maybe a visualization system can be constructed based on this algorithm as there are actually some problems in this paper. For example, although the authors claim that their method can compress the graph by finding the models, the compression ratio is actually very low; the algorithm is also very time consuming: it takes 2.7 hours to run on a network with 250k edges.

2) Visual Analysis of the Air Pollution Problem in Hong Kong

I read this paper because it is very relative to the TCP Tree paper if we revise the topic from analysis of multivariate sensor data to air quality data, for this paper also studied the correlations among air quality variables. In this paper, a weighted graph is used to summarize the correlations of the variables, which is a bit like the annotation map in our system. The major difference between this paper and TCP Tree is that TCP Tree uses a hierarchical data structure to organize the correlations and extract the time slices when the correlations are significant.

3) Blockwise Human Brain Network Visual Comparison Using NodeTrix Representation

This paper applied NodeTrix to solve the visual comparison problems in human brain network. NodeTrix is actually not a new technique, but the applying this technique to visual comparison of human brain network is interesting. The dataset used in this paper is a ROI-based brain network. The ROIs are first grouped based on cerebral lobe classification and then divide the groups by a clustering algorithm. After that, NodeTrix is used to represent each groups.

5. A potential paper topic

I talked with my girlfriend and asked her if she had problems during her work. She told me that it takes her a long time to read reports to grade the enterprise bond. She told me about the procedure of grading an enterprise bond. Rating Agencies like Standard & Poor's give grades enterprise bonds into different levels, such AAA and AA+, however, managers don't know which bond is better if a set of bonds are in the same level, thus they need researchers to tell them which is better. For researchers, there isn't a standard for grading an enterprise bond although there are formulas to evaluate bonds. There are several reasons. The first reason is that enterprises from different industry are different. The second reason is that reading the report from enterprises is not enough, they need information from different data sources. The third reason is that there are lots of parameters in those formulas, and these parameters are changing among industries and times.

Maybe a visualization system for analyzing enterprise bonds is a potential topic, as the data source is heterogeneous, the procedure is relative to Knowledge Graph (I'm not sure), human decision is needed during the grading, and the automatic algorithms have a lot of parameters to adjust. The grades given by human and the grades given by algorithms is like a cross validation.

Plan:

1. Huawei Project

Finish the interactions.

Finish the requirement analysis.

2. Vis Submission

Finish the motivation of this work.

3. TCP Tree